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DEPARTMENT OF THE ARMY
ARMY CONCEPT TEAM IN VIETNAM
APO San Francisco 96243

AVIB-LED

12 June 1967

SUBJECT: Final Report - Body Armor (ACL-24/67I)

TO: Commanding General
United States Army, Vietnam
ATTN: AVHGC
APO 96307

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1. REFERENCES

- a. DF, ACTIV-LCD, this headquarters, 26 August 1965, subject: Armored Vests.
- b. Letter, ACTIV-LCD, this headquarters, 28 August 1965, subject: Armor Vest.
- c. MACV Msg 31094, 3 September 1965, subject: Flack Vests.
- d. MACV Msg 34505, 1 October 1965, subject: Armored/Flack Vests.
- e. MACV Msg 37854, 25 October 1965, subject: Protective Vests.
- f. MACV Msg 41667, 24 November 1965, subject: Protective Vest.
- g. N Labs Msg unnumbered (Air Mail), 16 December 1965, subject: Protective Vests.
- h. Letter w/1st indorsement, ACTIV-LCD, this headquarters, 28 December 1965, subject: Protective Vests.
- i. MACV Msg 03358, 2 February 1966, subject: Protective Vests.
- j. Letter, ACTIV-LCD, this headquarters, 16 March 1966, subject: Protective Vests.
- k. N Labs Msg 1957, 11 October 1966, subject: Body Armor for Ground Troops.

This document is classified
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12 June 1967

SUBJECT: Final Report - Body Armor (ACL-27/67I)

1. N Labs Msg 2158, 15 November 1966, subject: Infantry Armor Small Arms Protective.

2. PURPOSE

Determine troop acceptance, durability, and operational suitability of Armor, Infantry Small Arms, Protective Front and Back w/ Carrier, and Body Armor, Fragmentation Protective, Lightweight, and recommend changes as appropriate.

3. BACKGROUND

a. During August 1965 the Assistant Division Commander, 1st Cavalry Division (AM), requested information from the 1st Logistical Command on the capabilities of armored vests and the status of improved versions of current vests. This request for information was initiated after a member of the Division was killed by a partially spent bullet while wearing, according to initial reports, an armored vest (reference 1a). Subsequent investigation revealed that the individual was wearing a flack vest. The inquiry was subsequently referred to ACTIV for action.

b. On 28 August 1965, ACTIV requested that the Commanding General, US Army Materiel Command furnish ACTIV information on the degree of protection that is provided by standard body armor. Information was also requested on current and planned body armor projects (reference 1b). Follow-up messages were dispatched 3 September 1965, and 1 October 1965 (reference 1c and 1d).

c. Subsequent correspondence and follow-up action resulted in the protective armor's being shipped to RVN in October 1966 (references 1e through 1i). The armor was, however, shipped directly to the unit, which resulted in problems of item location and identification. The items were finally located in the 1st Cavalry Division (AM) on 12 December 1966.

4. DISCUSSION

a. Two types of body armor were shipped to RVN for evaluation. A brief description of each follows:

(1) Body Armor, Fragmentation Protective, Lightweight is designed to provide front and rear protection from shoulder to waist against shell fragments. The vest has fillers constructed of nylon felt layers encased in polyethylene, and weighs approximately 5 pounds.

(2) Armor, Infantry Small Arms, Protective Front and Back

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w/Carrier is designed to provide front and rear protection from shoulder to waist against shell fragments and .50 caliber AP. The vest is constructed of ceramic fiberglass and weighs approximately 20 pounds.

b. Test items were evaluated by the 1st Cavalry Division (AM). Questionnaires were completed by users of the test item. These data were subjected to comparative and qualitative analysis.

c. Body Armor, Fragmentation Protective, Lightweight:

(1) The results of the evaluation of Body Armor, Fragmentation Protective, Lightweight were generally unfavorable. The test item was used by troops under operational conditions. Summary of comments relative to the evaluation environment were:

(a) The test item was worn by troops on search and destroy missions, reconnaissance patrols, and while performing perimeter defense duty and highway patrol.

(b) No respondent wore the test item more than 50 times during the evaluation. The median number of times the item was worn by an individual was 25.

(c) The time individuals wore the test item varied from 1 to over 4 hours. The majority of the respondents indicated that each time the test item was used, it was worn in excess of 4 hours.

(d) The test item was worn while walking, sitting, and standing.

(e) Weather conditions were described as hot-dry, hot-wet, cool-dry, and cool-wet. The majority of the respondents described weather conditions under which the test item was worn as hot-dry.

(2) In general, the test item was described as being too heavy and hot for field use under climatic conditions encountered in RVN. Summary of comments relative to the test item were:

(a) Most respondents (85 percent) indicated that the test item was uncomfortable. Of those describing it as being uncomfortable, the majority stated that the item was too hot and caused skin rash. It was also stated that the vest was too heavy and did not permit air circulation.

(b) The VELCRO fasteners were described as satisfactory. However, the elastic laces on each side of the vest had a tendency to become untied, or slip, when the vest was worn for long periods of time.

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(c) Pockets were described as adequate. It was pointed out that snaps did not secure heavy items in the pockets.

(d) A majority of the respondents indicated that the weight and configuration of the armor did not restrict their ability to perform normal tasks. A minority indicated that when the vest was worn, the web equipment did not fit properly.

(e) No test item was reported damaged during the evaluation.

(f) All respondents indicated that the item was not acceptable for wear by foot mobile troops while performing search and destroy, patrolling, or reconnaissance missions; the item was described as being acceptable for wear while on perimeter defense (static duty) and mounted operations.

d. Armor, Infantry Small Arms, Protective Front and Back w/Carrier:

(1) The evaluation results of Armor, Infantry Small Arms, Protective Front and Back w/Carrier was generally favorable. The test item was used by members of the division under operational conditions. Summary of comments relative to the evaluation environment were:

(a) The test item was worn by personnel on convoy escort duty and on motorized patrols.

(b) The time respondents remained in the test item varied from 1 to over 4 hours. The median time was 3 hours.

(c) The test item was worn primarily while sitting and standing.

(d) Weather conditions were described as hot-dry and hot-wet.

(2) In general, the item was described as being comfortable when properly adjusted and was desirable for wear while performing convoy escort duty. Summary of comments relative to the test item were:

(a) The weight or configuration of the body armor did not restrict the ability of the wearer to perform normal tasks. It should be noted that the vest was worn primarily while the individual was sitting or standing.

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(b) One respondent stated that while standing the vest was comfortable. When sitting, however, the vest had a tendency to cut into the waist just under the rib cage.

(c) The item was described as being too heavy for walking, even for short distances.

(d) The vest was worn with both the front and rear protective plates installed. No difficulty was experienced with the VELCRO fasteners in securing the plates.

(e) No test item was reported damaged during the evaluation.

(f) The test item was worn by respondents in all cases when protection was required. One respondent indicated that because of its weight, he wore the vest only when performing convoy escort duty through extremely hostile territory. Another, however, stated that he would not go on convoy escort duty without one.

5. FINDINGS

a. Body Armor, Fragmentation Protective, Lightweight:

(1) The test item was too hot and heavy for field use by foot mobile troops, in RVN.

(2) The item was acceptable for wear while performing perimeter defense duty (static).

(3) The test item was uncomfortable.

(4) The VELCRO fasteners were satisfactory.

(5) The elastic laces on each side of the vest had a tendency to slip when the vest was worn for extended periods.

(6) Pockets were adequate, but snaps did not secure heavy items.

(7) The weight and configuration did not restrict the ability of the user to perform normal tasks.

(8) Some difficulty was experienced getting a proper fit of web gear while wearing the vest.

(9) The test item was durable.

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b. Armor, Infantry Small Arms, Protective Front and Back w/
Carrier,

(1) The test item was comfortable when properly adjusted.

(2) The test item was too heavy for wear while walking,
even for short distances.

(3) The weight and configuration of the armor did not
restrict the ability of the individual to perform normal tasks.

(4) The item was desirable for wear while performing con-
voy escort duty, or on motorized patrols.

(5) The test item was durable.

6. CONCLUSION

It is concluded that:

a. Body Armor, Fragmentation Protective, Lightweight is durable
but is not acceptable for wear by foot mobile troops while engaged in
search and destroy operations, patrolling, or reconnaissance missions.

b. Armor, Infantry Small Arms, Protective Front and Back w/
Carrier is durable and is acceptable for use by personnel engaged in
convoy escort duty, motorized patrols, and other similar functions.

7. RECOMMENDATION

It is recommended that:

a. A follow-on evaluation of Body Armor, Fragmentation Protec-
tive, Lightweight be conducted using troops in Mechanized Infantry and
Armor units.

b. Continued emphasis be placed on reducing the weight of body
armor. Consideration should be given to a design that will permit air
circulation.

c. Armor, Infantry Small Arms, Protective Front and Back w/
Carrier, be made available for issue to troops engaged in convoy escort

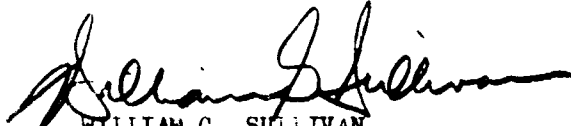
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duty, motorized patrols, and other similar functions.

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WILLIAM G. SULLIVAN
Colonel, Infantry
Commanding

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Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author) Army Concept Team in Vietnam (ACTIV) APO San Francisco 96243		2a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED	
		2b. GROUP N/A	
3. REPORT TITLE BODY ARMOR			
4. DESCRIPTIVE NOTES (Type of report and inclusive dates) FINAL REPORT - 15 January to 30 May 1967			
5. AUTHOR(S) (First name, middle initial, last name) SPICELY, Samuel B., LTC, QMC			
6. REPORT DATE 12 June 1967		7a. TOTAL NO. OF PAGES 7	7b. NO. OF REFS 12
8a. CONTRACT OR GRANT NO. a. PROJECT NO. NONE c. d.		9a. ORIGINATOR'S REPORT NUMBER(S) ACTIV Project No. ACL-24/67I 9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report) NONE	
10. DISTRIBUTION STATEMENT THIS DOCUMENT IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE			
11. SUPPLEMENTARY NOTES NONE		12. SPONSORING MILITARY ACTIVITY US Army, Vietnam APO SF 96307	
13. ABSTRACT Troop acceptance durability, and operational suitability of Armor, Infantry Small Arms, Protective Front and Back with Carrier, and Body Armor, Fragmentation Protective, Lightweight were determined in Vietnam. (U) Body Armor, Fragmentation Protective, Lightweight is durable but is not acceptable for wear by foot mobile troops while engaged in search and destroy operations, patrolling, or reconnaissance operations. (U) Armor, Infantry Small Arms, Protective Front and Back with Carrier is durable and acceptable for use by personnel engaged in convoy escort duty, motorized patrols, and similar functions. (U) Continued R&D emphasis should be placed on reducing the weight of body armor. Armor Infantry Small Arms, Protective Front and Back with carrier, should be made available for issue to troops engaged in convoy escort duty, motorized patrols, and similar functions.			

DD FORM 1473

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14.	KEY WORDS	LINK A		LINK B		LINK C	
		ROLE	WT	ROLE	WT	ROLE	WT
	Armor, Infantry Small Arms, Protective Front and Back with Carrier Troop acceptance, durability, operational suitability						
	Body Armor, Fragmentation Protective, lightweight troop acceptance, durability operational suitability						
	Counterinsurgency environment, Vietnam						

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